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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/812,399 | 03/30/2004 | Makoto Kitagawa | 57810-099 | 1751 |

7590 04/10/2007
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| EXAMINER |
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SITTA, GRANT

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2609

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 04/10/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/812,399

Applicant(s)

KITAGAWA ET AL.

Examiner

Grant D. Sitta

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 3/30/2004.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/30/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 7 and 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 2, 4 and 12 objected to because of the following informalities:

"...selecting either at least either..." Appropriate correction is required.

3. Claim 10 objected to because of the following informalities: "...at least either at least either..." (lines 14-15 of claim 10). Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2609

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-5, 8-13 and 16-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu et al (US 2003/0067435) hereinafter, Liu.

6. In regards to claim 1,

A light source (fig. 3 (29)) and

An applied voltage control (fig. 3 (32)) part controlling a voltage applied to a display pixel (fig. 3 (28) it is inherent that LCDs have pixels) in response to an ON- or OFF state of said light source ([0021] Fig. (32) and (M) "the T-V curve is controlled by a mode signal from the controller"), wherein

Said applied voltage control part (fig. 3 (32)) includes a control circuit detecting said ON or OFF state (fig.3 (39) Examiner notes that the optical sensor can turn ON and OFF the light source. However, by turning ON and OFF the light source the optical sensor is determining the true character of the light source and thus satisfies the criteria for "detecting.") of said light source (fig. 3 (29)) and outputting either at least either white reference voltage data or black reference voltage data ([0022] "black and white display voltage levels.") corresponding to said ON-state of said light source or at least either white reference voltage data or black reference voltage data corresponding to said OFF state of said light source on the basis of said ON or OFF state of said light source (fig. 3) [0020]-[0021] ("i.e., the backlight is turned on and the gamma curve correction is switched to the T-V curve.)

7. In regards to claim 2,

A memory (fig. 6 (44), "ROM") storing at least either said white reference voltage data or said black reference voltage corresponding to said ON-state of said light source ([0022], as stated above in claim 1) and at least either said white reference voltage data or said black reference voltage data corresponding to said OFF-state of said light source ([0021], ("i.e., the backlight is turned on and the gamma curve correction is switched to the T-V curve.)).

A selection circuit (fig. 3 (32), Examiner notes the control circuit and the selection circuit can be the same part) detecting said ON- or OFF state of a light source and selecting either white reference voltage data or black reference voltage corresponding to said ON- state of said light source or at least either said white reference voltage data or said black reference voltage data corresponding to said OFF state of said light source on the basis of said ON- or OFF state of said light source ([0020]. "The selection of the R-V curve and the T-V curve is controlled by a mode signal from the controller. When the LCD panel is operated in the reflection mode..." Examiner notes when the controller selects the reflective mode the backlight will be in the OFF state and will produce a "black and white display voltage level" [0022] that corresponds to R-V or T-V curve)

8. In regards to claim 3 and 11, where white reference voltage data and black reference data are digital signal (fig. 6 [0024], "digital gamma curves"); and

Display further comprises a reference voltage digital to analog conversion circuit (fig. 6 (52)) converting at least either white or black reference voltage [0022] digital data

corresponding to ON- or OFF-state of the light source ([0024] "M signal is used to turn ON or OFF the back light).

9. In regards to claims 4 and 12, video data ([0020], "video signal") supplied to the display is digital data ([0024], "to supply digital gamma curves" and "in digital form", "In this manner, the gamma curve to be supplied...which is suitable for a totally digital display system"); and

Comprising a video data digital-to-analog conversion circuits (fig.6 (52)) converting video data from a digital signal to an analog signal ([0024]) on the basis of at least either white reference voltage data or black reference voltage corresponding to ON-state of said light source or at least either white reference voltage data or black reference data corresponding to OFF-state of the light source ([0021]-[0022]).

10. In regards to claims 5 and 13 where the video data digital-to-analog conversion circuit (fig. 6 (52)) converts video data ([0020], "video signal") from digital signal to an analog signal ([0024]) on the basis of both said white reference voltage data and black reference voltage data ([0022] "between the black AND white display voltage").

11. In regards to claims 8 and 16, comprising a transmission region (Fig. 1B) and a reflection region (Fig. 1A), for displaying with at least said transmission region when said light source is in said ON-state while displaying with said reflection region when said light source is in said OFF-state ([0021], "When the environment is dim, the sensed signal by the sensor reaches the present threshold and this issues an illumination notification signal I to switch to the transmission display mode."), and

Applying a transmission voltage ("T-V") to said display pixel with said applied

voltage control part (fig. 3 (32)) when said light source is in said ON-state while applying a reflection voltage ("R-V") to said display pixel with said applied voltage control part (fig. 3 (32)) when said light source is in said OFF-state [0021].

12. In regards to claims 9 and 17, when the voltage control parts apply voltage in response to an ON-or OFF-state of the light source produce a substantially identical brightness-gradation characteristics [para [0021]-[0022]]. Examiner notes the purpose of the "illumination notification" ([0021]) is to provide the same brightness levels in the transmission display mode as the reflective mode when the environment is dim. Furthermore, unless the modes are biased with the respective gamma curves it "will degrade the display performance" [0022].

13. In regards to claim 10, for the reasons stated in claims 1 and 2.

14. In regards to claim 18, a light source (fig. 3 (29)) and an applied voltage control part (fig. 3 (32)) controlling a voltage applied to a display pixel (fig. 3 (28) it is inherent LCD panels have display pixels) in response to an ON- or OFF state of said light source [0020], "the mode signal M is also used to turn on or off the backlight"); and

An applied voltage control circuit (fig. 3 (32)) includes a gamma correction circuit (fig. 3 (34)) detecting said ON- or OFF-state (fig. 3 (39)) of said light source (fig. 3 (29)) and gamma-correcting video ([0020] "video signal") data on the basis of either gamma correction data corresponding to said ON-state of said light source or gamma correction data corresponding to said OFF-state of said light source ([0024]).

15. In regards to claim 19, where the gamma correction circuit (fig. 3 (34)) includes: a storage part (fig. 6 (44), "ROM") storing said gamma correction data (fig. 6 (46)) and

(48)) corresponding to said ON-state of said light source (fig. 3 (29)) and said gamma correction (fig. 3 (γ)) data corresponding to said OFF-state (fig. 3 (M)) of said light source,

A selection circuit (fig. 3 (32)) detecting said ON- or OFF-state of said light source (fig. 3 (29)) and selecting either said gamma correction data (fig. 3 (γ)) corresponding to said ON-state of said light source or said gamma correction data corresponding to said OFF-state of said light source on the basis of said ON- or OFF-state (fig. 3 (M)) of said light source (fig. 3 (29)), and

A data processing circuit (fig. 3 (26)) gamma-correcting said video data (fig. 3 (DV)) on the basis of either said gamma correction data (fig. 3 (γ)) corresponding to said ON-state of said light source (fig. 3 (29)), or said gamma correction data (fig. 3 (γ)) corresponding to said OFF-state of said light source.

16. In regards to claim 20, where in gamma correction data is digital data ([0024]), "to supply digital gamma curves" and "in digital form");

With display further comprising a digital-to-analog conversion circuit (fig. 6 (52)) converting video data gamma-corrected with said gamma correction digital data from a digital signal to an analog signal ([0024]).

17. In regards to claim 21, The display according to claim 18, further comprising a transmission region (fig. 1B) and a reflection region (fig 1A), for displaying (fig. 1C) with at least said transmission region (fig. 1B) when said light source is in said ON-state while displaying with said reflection region when said light source is in said OFF-state ([0008] and [0021]), and

Applying a transmission voltage ("T-V") to said display pixel with said applied voltage control part when said light source is in said ON-state while applying a reflection voltage ("R-V") to said display pixel with said applied voltage control part (fig. 3 (32)) when said light source is in said OFF-state ([0008]).

18. In regards to claim 22, said applied voltage control part controls said voltage applied (fig. 3 (32)) to said display pixel (fig. 3 (28) (It is inherent a display has a pixel) in response to said ON- or OFF-state of said light source so that brightness-gradation characteristics (Brightness- gradation characteristics are an inherent characteristic of gamma correction.) in said ON-state of said light source and brightness-gradation characteristics in said OFF-state of said light source are substantially identical to each other ([0022] "such a different between the R-V curves and T-V curves will degrade the display performance unless respective gamma curves are biased for the different display modes").

19. In regards to claim 23, detecting an ON- or OFF-state of a light source (fig. 3 (39)) having different bright-gradation characteristics ([0021]); and

Controlling (fig. 3 (32)) a voltage applied to a display pixel in response to said ON- or OFF-state of said light source [0020], "A data driver receives the display data signal D from the controller and generates data voltages DV for the image gray levels to drive the sources of the thin film transistors (TFT)".

20. In regards to claim 24, same reason as for claim 22.

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

23. Claims 6, 7, 14 and 15 are rejected under 35 U.S.C. 103(a) as being obvious to one skilled in the art in view of Lui.

24. In regards to claim 6, see the reasoning of claim 4, Examiner notes it would have been obvious matter of design choice to modify the order of the of the video data digital-to-analog conversion circuit with the white or black reference voltage data corresponding to the ON- or OFF- state of the light source. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device). Applicant has not disclosed that having the video data digital-to-analog conversion circuit before the correcting circuit solves any stated problem or is

for any particular purposes and it appears that signal correction would perform equally well in either configuration.

25. In regards to claim 7, where the video data digital-to-analog conversion circuit (fig. 6 (52)) converts video data [0020, "video signal"] from digital signal to an analog signal ([0024]) on the basis of both said white reference voltage data and black reference voltage data ([0022] "between the black AND white display voltage"). It would be obvious to one skilled in the art to use both black and white display voltage as this is often the means for implementing gray scale voltage.

26. Claim 14 is rejected for the same reasoning as claim 6.

27. Claim 15 is rejected for the same reasoning as claim 7.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Okuzono (6,727,874); Tsutsui (2004/0104878); Nishikawa (2006/0164408); Hong (2003/0006952); Yamazaki (7,068,246); Miyachi (6,937,224); Yamazaki (5,699,078); Kawaguchi (2006/0055661); Yamada (2005/0253831); Takahashi (2005/0024311); Nakajima (2003/0234800); Ohtani (2003/0071773); Ito (6,249,270); Ochi (5,666,132); Kondoh (6,750,837); Kim (2007/0046606); Nishimura (2002/0154088); Okishiro (2006/0208998); Georges (6,650,340); Sugino (2005/0259064); Yamaguchi (6,987,499); Fujine (2006/0158410); Takahashi (6,987,501); Ishii (2004/0012551); Shimomura (5,406,305); Helms (5,952,992); Suzuki (6,078,302).

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Grant D. Sitta whose telephone number is 571-270-1542. The examiner can normally be reached M-Th 7:30-5:00.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571-270-1550. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to USPTO Customer Service Representative or access to the automated information system whose telephone number is 1-800-786-9119 or 571-272-1000.

Grant D. Sitta

March 27, 2007


AMARE MENGISTU
SUPERVISORY PATENT EXAMINER